

PIKA DAYTONA™ Voice Card Hardware Manual

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1 Introduction

The PIKA DAYTONA card is family of IBM AT (ISA) bus compatible DSP resource cards for use in PC based voice systems. The DAYTONA family provides up to 24 analog telephone line interfaces in a variety of different configurations.

The cards are fully MVIP bus (Multi-Vendor Interface Protocol) compliant, allowing them to be interconnected with any other MVIP compatible cards in the host system.

The following table lists the available variants within the DAYTONA card family, showing analog line configuration and DSP audio processing power in MIPS:

Domestic Variants:

MODEL	POTS Lines	Analog Loop Start Lines	DSP MIPS
24P	24	0	60
24L	0	24	60
12P	12	0	30
12L	0	12	30
8P4L	8	4	30
16P8L	16	8	60

International Variants:

MODEL	POTS Lines	Analog Loop Start Lines	DSP MIPS
12L-i	0	12	30
12L-i/GT	0	12	60

2 DAYTONA Description

The DAYTONA family cards are IBM AT (ISA) bus compatible, providing analog interfaces to telephone lines of various types. These cards have up to two on board DSP devices, can support one V-ENGINE DSP module, and an MVIP connector for interconnection to other compatible devices in the host system. Both cards provide MVIP compatible circuit switching for 512 time slots.

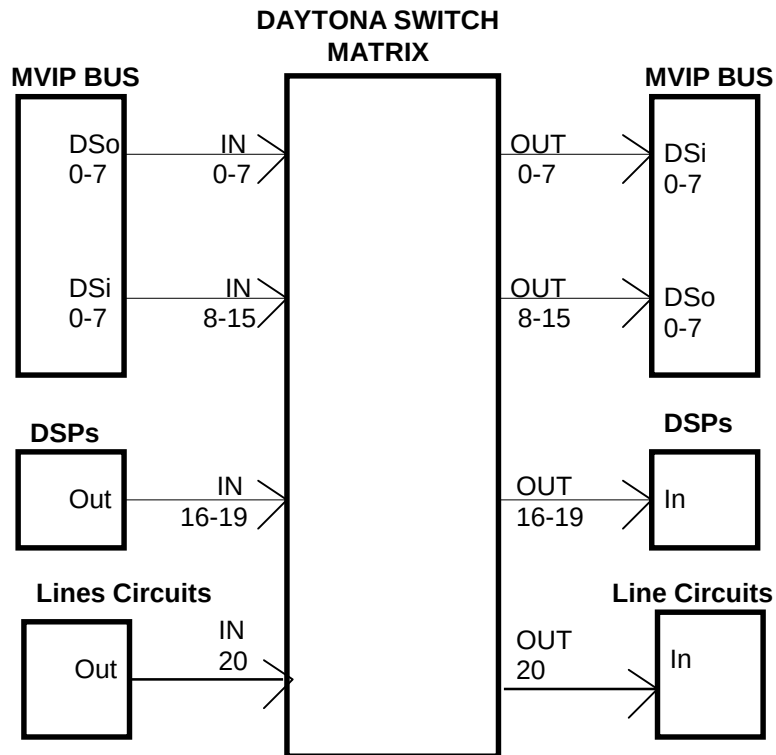
2.1 Switching Capability

The DAYTONA supports a central digital switching matrix based on the industry standard FMIC device. The switch matrix is used for connecting the audio Input/Outputs of voice/data resources together, including Line Circuits, DSP devices and MVIP Bus.

The switch matrix on the card is classed as *MVIP Enhanced Compliant* which means it can connect to the MVIP on the full 512 channel switching capability, and can switch internal resources without using the MVIP Bus.

The following diagram graphically illustrates the digital switching paths available on the DAYTONA:.

Note that any input to the DAYTONA switch matrix can be connected to any output of the matrix.



2.2 Telephone Line Ports (Domestic Variants)

The DAYTONA card is assembled in a number of configurations, consisting of combinations of Loop Start and POTS type telecom line interfaces.

2.2.1 LOOP START Line

DAYTONA VERSIONS: 12L, 24L, 8P4L, 16P8L

Loop Start line interfaces provide a termination which behaves the same way that a telephone set does when connected to a wall plug (i.e. PBX or Public Network port). The DAYTONA Loop Start Line ports initiate outbound calls by going OFFHOOK and dialing, and they take incoming calls by detecting ringing voltage then going OFFHOOK.

The DAYTONA card's downloadable onboard firmware performs all real-time related LOOP START line functions including supervision of RINGING voltage, BATTERY REVERSAL and LOOP CURRENT DISCONNECT. The card performs signaling functions including generation of OFFHOOK, DIALING and HOOKFLASH signals.

The DAYTONA line interface supports high impedance audio reception during the on-hook state, allowing the card to perform tasks such as CLASS signaling (Caller I.D.), KT23 signaling (on-hook DTMF detection), and high impedance audio logging.

The following specifications apply to the Loop Start Line interface:

Signaling:

- DC resistance: 250-325 ohms
- DC current range: 18 - 90 mA

Supervision:

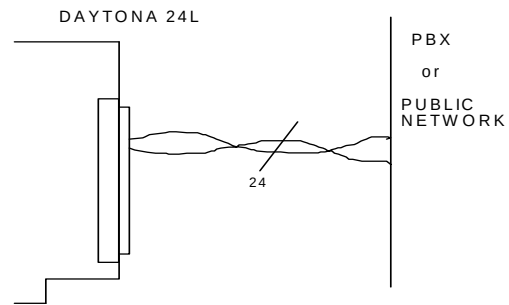
- Ringing: Voltage detection
- Loop current disconnect
- Battery reversal (Factory option)

Transmission:

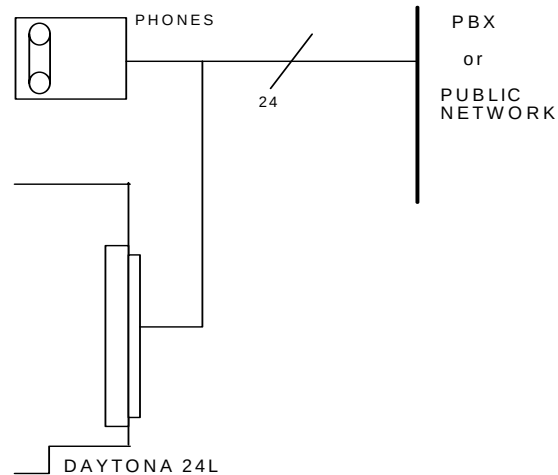
AC Impedance ONHOOK: > 10Kohm at 20Hz.

AC Impedance OFFHOOK: 600ohms.

The following shows typical applications of Loop Start lines on the DAYTONA 24L:



LOOP START LINE CONNECTION



BRIDGED CONNECTIONS

2.2.2 POTS Line

DAYTONA VERSIONS: 12P, 24P, 8P4L, 16P8L

POTS line (Plain Old Telephone Set) interfaces also known as SLICS provide talk battery (-48 volts DC) and ringing voltage (90 VAC/20Hz).

The DAYTONA card's downloadable onboard firmware performs all real-time related POTS line functions.

The following specifications apply to the DAYTONA family POTS Line interface:

Current Feed:

DC resistance: 400 ohms

DC current range: 18 - 70 mA

Ringing Voltage:

Cadence: Software programmable.

Power load distribution: programmable.

Zero Cross switching.

Supervision:

OFFHOOK/ONHOOK

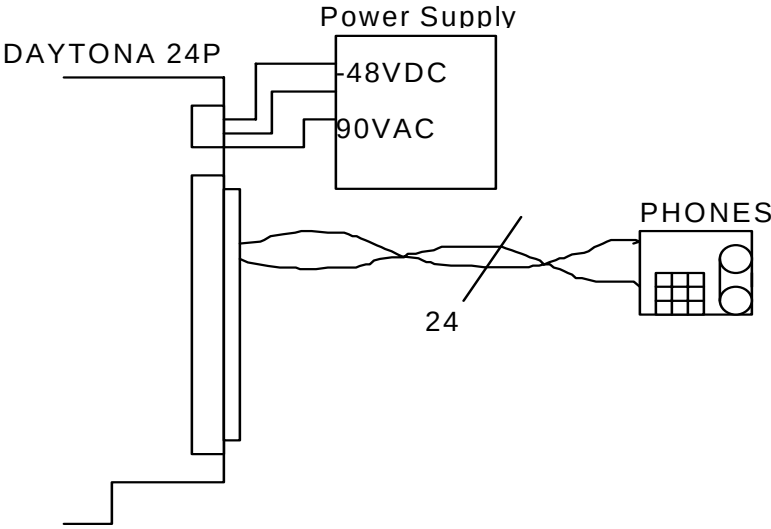
Ring Trip

HOOKFLASH

Transmission:

AC Impedance: 600ohms.

The following shows a typical application of POTS Lines on the DAYTONA 24P:



POTS LINE CONNECTION

2.2.3 Voltage Sense Output

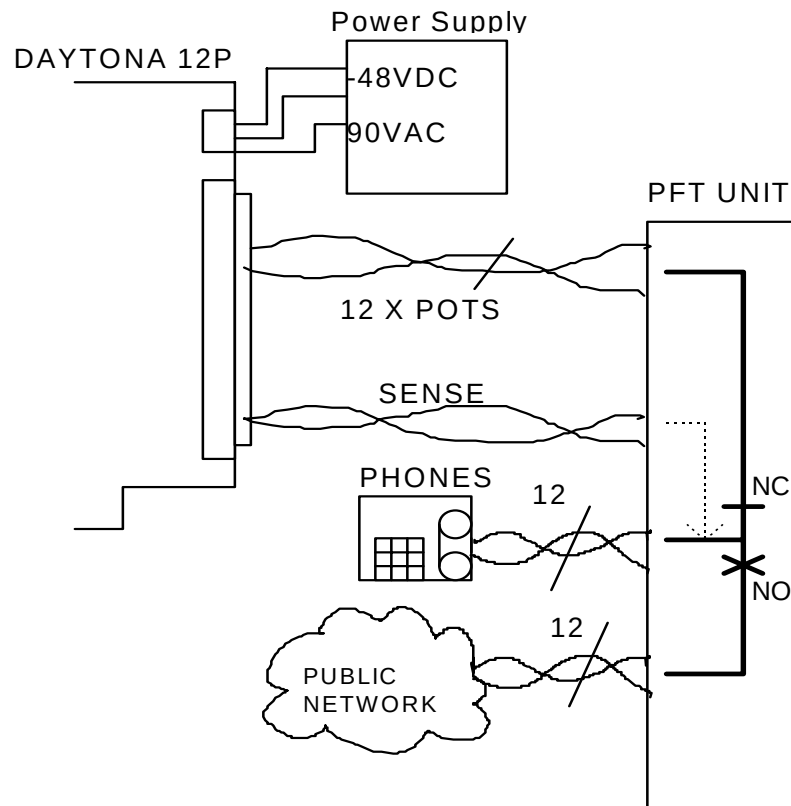
DAYTONA VERSIONS: 12P, 24P, 8P4L, 16P8L

All versions of the DAYTONA supporting POTS lines provide a pair of wires on the telecom connector for use as a Voltage Sense output. The typical application for the Voltage Sense output pair is for remote control of a Power Fail Transfer relay.

The Voltage Sense output consists of a short circuit protected battery and ground pair routed from the external POTS line power supply. The following table details the Voltage Sense output characteristics:

Output voltage	-48 VDC
Output resistance	20 ohms
Maximum operating current	120 mA DC
Minimum short circuit current	500 mA DC
Short circuit recovery time	10 Seconds

The following application shows how the Voltage Sense Output is typically used implement Power Fail Cut-through in conjunction with the DAYTONA 12P:

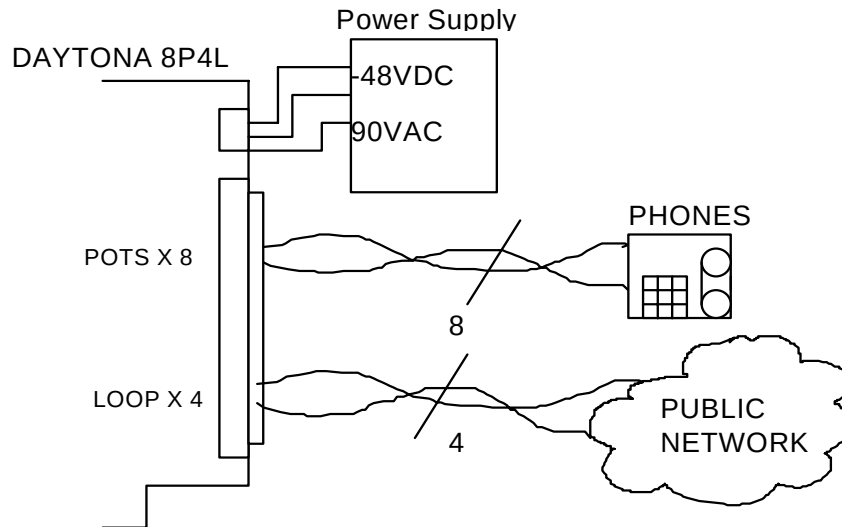


SENSE LINE USAGE

2.2.4 Mixed Line Variants

DAYTONA VERSIONS: 8P4L, 16P8L

The DAYTONA 8P4L and 16P8L provide combinations of Loop Start and POTS Lines on the same card. The following application shows how the DAYTONA 8P4L is used:



MIXED LINE CONNECTIONS

2.3 Telephone Line Ports (International Variants)

The Daytona family includes variants compatible with international standards. The difference between the domestic and international variants is only in the line interface circuitry.

2.3.1 International Loop Start Line

DAYTONA VERSIONS: 12L-i, 12L-i/GT

The International Loop Start line interface performs the same function as the standard Loop Start line interface (see 2.2.1), but is designed to provide higher isolation voltage.

An additional feature of this circuit is the ability to select line supervision mode via jumper on a per circuit basis. If the jumper is installed, the circuit detects loop current disconnects like the North American circuit. If the jumper is removed, the circuit becomes polarity sensitive, thereby providing loop reversal detection. Refer to section 3 for location of these jumpers.

This circuit supports high impedance audio reception during the on-hook state, allowing the card to perform tasks such as CLASS signaling (Caller I.D.), KT23 signaling (on-hook DTMF detection), and high impedance audio logging.

The International Loop Start Line circuit supports the Ground Button signal for PBX alerting. This feature involves momentary connection of a third input lead (PBX GROUND) to the RING lead through an internal relay contact.

The following specifications apply to the International Loop Start Line interface:

Signaling:

DC resistance: 400 ohms nominal.
DC current range: 18 - 80 mA

Supervision:

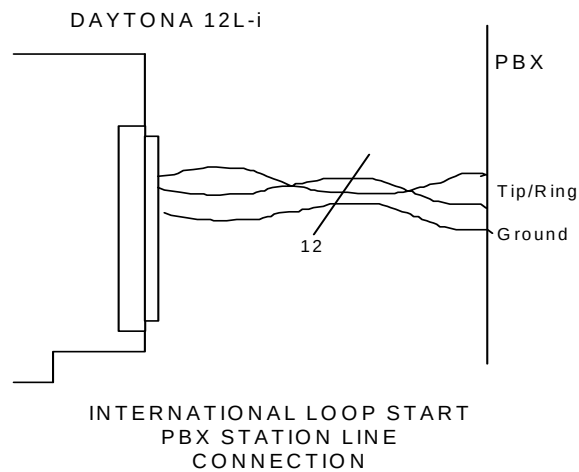
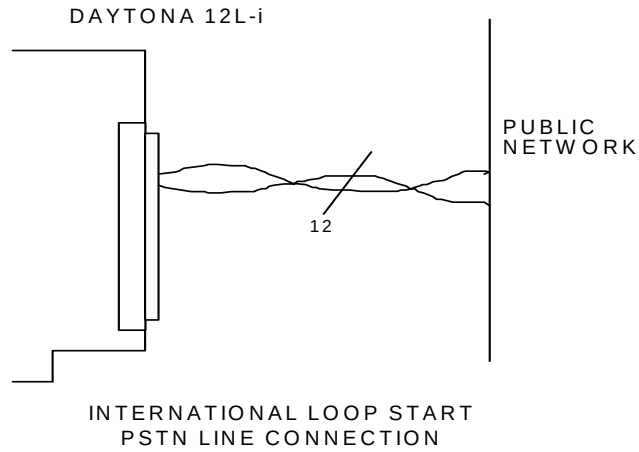
Ringing: Voltage detection
Loop current disconnect
Battery reversal (jumper option)

Transmission:

AC Impedance ONHOOK: > 10Kohm at 20Hz.

AC Impedance OFFHOOK: 600ohms.

The following show typical applications of Loop Start lines on the DAYTONA 12L-i:

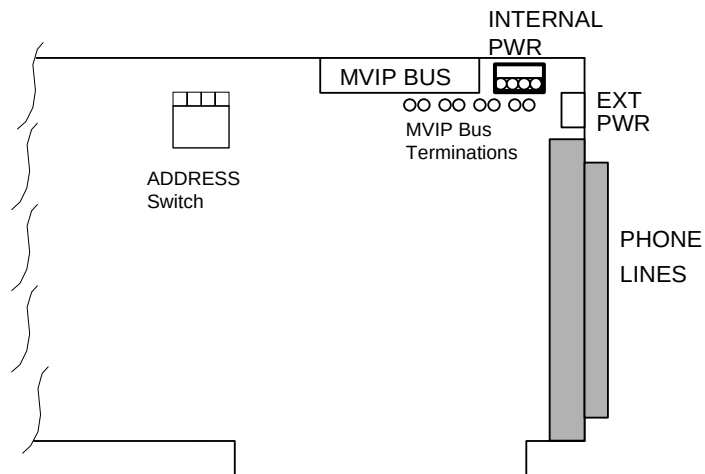


3 Hardware Installation

Before using the DAYTONA card, the following features must be setup:

1. PC Installation:
 - Card Base Address.
2. Telephone lines:
 - Telephone line connections.
 - External Power supply connection (POTS versions only).
 - Line reverse/Loop current detector (International version only).
3. MVIP bus:
 - MVIP bus termination.

The following figure illustrates the DAYTONA card layout:



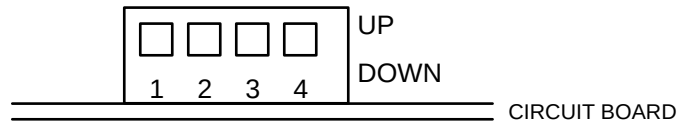
3.1 PC Installation

All variants of the DAYTONA are installed in the host PC in the same way as described in this section. The card can be inserted in any free 8-bit or 16-bit slot, and does not use any hardware interrupts or system memory.

3.1.1 Setting Base I/O Address

The DAYTONA card occupies 32 consecutive I/O addresses of the PC bus, and no system memory space. The start or *Base* address is user selectable, ensuring no conflicts with any type of peripheral card. Each DAYTONA card in the system is set to a different base address the BASE ADDRESS dipswitch located conveniently at the top of the card as shown:

Base Address Switch (TOP VIEW)



1	2	3	4	BASE ADDRESS
D	D	D	D	0x200
D	D	D	U	0x220
D	D	U	D	0x240
D	D	U	U	0x260
D	U	D	D	0x280
D	U	D	U	0x2A0
D	U	U	D	0x2C0
D	U	U	U	0x2E0
U	D	D	D	0x600
U	D	D	U	0x620
U	D	U	D	0x640
U	D	U	U	0x660
U	U	D	D	0x680
U	U	D	U	0x6A0
U	U	U	D	0x6C0
U	U	U	U	0x6E0

NOTE ABOUT BASE ADDRESS SELECTION:

For historical reasons, the PC architecture defined by IBM restricts peripheral cards (i.e. non motherboard based devices) to using I/O addresses in the range 0x200 to 0x3FF, although the 286/386/486 processors actually support 16 bit I/O (0x0000 to 0xFFFF).

The PIKA cards overcome this address space limitation by decoding the entire I/O address bus (A15-A0), providing paging into addresses above the standard range (i.e. 0x600 and above).

Some older peripheral cards ignore address lines A10 to A15, meaning that these cards will decode addresses 0x600 to 0x6E0 as addresses 0x200 to 0x2E0. Selecting base addresses above 0x600 may not resolve conflicts between a PIKA card and other cards.

The following figure illustrates how the PC's I/O addresses are decoded by different cards:

Description	A15-A11	A10	A9	A8	Decoded Address
Standard decoding	X	X	1	0	(0x200-0x2FF) +(0x600-0x6FF)
PIKA Low addresses	X	0	1	0	0x200-0x2FF
PIKA High addresses	X	1	1	0	0x600-0x6FF

3.2 Telephone Line Ports Setup

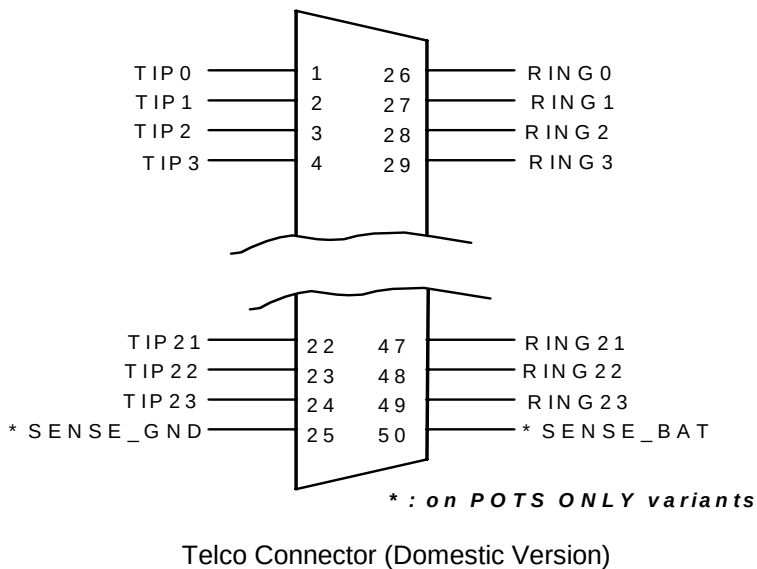
The DAYTONA telephone line ports require onboard configuration, external connection and external power supply connection (depending on model in use).

3.2.1 Domestic Variants

The domestic variants of the DAYTONA simply require that the analog lines be connected to the card and that an external battery and ringing supply be attached (where applicable).

3.2.1.1 Telecom Connector

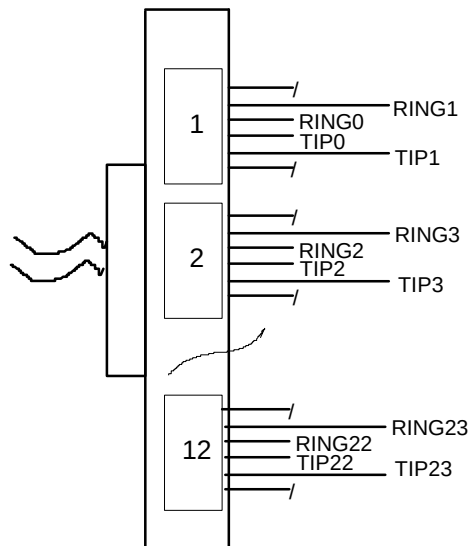
The lines are connected through an RJ-21style connector, with pinout as defined below:



The following table shows in detail the full telco connector pinout and line types for each DAYTONA mode (DOES NOT INCLUDE INTERNATIONAL VERSIONS OF THE CARD):

PIN	SIG	PIN	SIG	12L	24L	12P	24P	8P4L	16P8L
1	TIP0	26	RING0	LOOP	LOOP	POTS	POTS	LOOP	LOOP
2	TIP1	27	RING1	LOOP	LOOP	POTS	POTS	LOOP	LOOP
3	TIP2	28	RING2	LOOP	LOOP	POTS	POTS	LOOP	LOOP
4	TIP3	29	RING3	LOOP	LOOP	POTS	POTS	LOOP	LOOP
5	TIP4	30	RING4	LOOP	LOOP	POTS	POTS	POTS	LOOP
6	TIP5	31	RING5	LOOP	LOOP	POTS	POTS	POTS	LOOP
7	TIP6	32	RING6	LOOP	LOOP	POTS	POTS	POTS	LOOP
8	TIP7	33	RING7	LOOP	LOOP	POTS	POTS	POTS	LOOP
9	TIP8	34	RING8	LOOP	LOOP	POTS	POTS	POTS	POTS
10	TIP9	35	RING9	LOOP	LOOP	POTS	POTS	POTS	POTS
11	TIP10	36	RING10	LOOP	LOOP	POTS	POTS	POTS	POTS
12	TIP11	37	RING11	LOOP	LOOP	POTS	POTS	POTS	POTS
13	TIP12	38	RING12	-	LOOP	-	POTS	-	POTS
14	TIP13	39	RING13	-	LOOP	-	POTS	-	POTS
15	TIP14	40	RING14	-	LOOP	-	POTS	-	POTS
16	TIP15	41	RING15	-	LOOP	-	POTS	-	POTS
17	TIP16	42	RING16	-	LOOP	-	POTS	-	POTS
18	TIP17	43	RING17	-	LOOP	-	POTS	-	POTS
19	TIP18	44	RING18	-	LOOP	-	POTS	-	POTS
20	TIP19	45	RING19	-	LOOP	-	POTS	-	POTS
21	TIP20	46	RING20	-	LOOP	-	POTS	-	POTS
22	TIP21	47	RING21	-	LOOP	-	POTS	-	POTS
23	TIP22	48	RING22	-	LOOP	-	POTS	-	POTS
24	TIP23	49	RING23	-	LOOP	-	POTS	-	POTS
25	S-GND	50	S-BAT	-	-	SENSE	SENSE	SENSE	SENSE

The following diagram illustrates the pinout provided by the optional Telco line extender cable and RJ14 breakout connector:



3.2.1.2 External Battery Supply

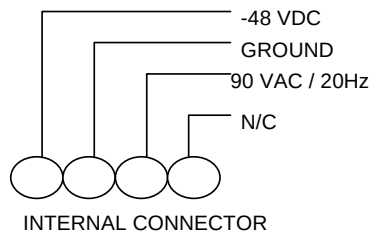
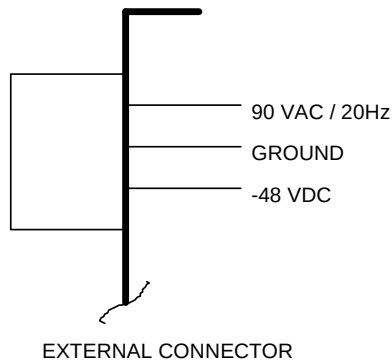
DAYTONA Models: -12P, -24P, -8P4L, -16P8L

Use of the POTS line circuits on the DAYTONA requires use of an external power supply for battery and ringing voltages as specified below:

BATTERY: -48VDC, 60mA per POTS line.

RINGING: 90VAC at -48VDC, 1 Watt per POTS line.

Connection to the external battery supply can be made either at the bracket end of the card ('EXTERNAL') or directly on the card (INTERNAL), as shown in the following figures:

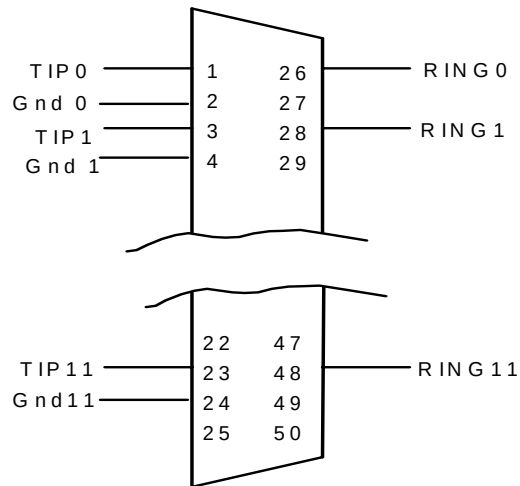


3.2.2 International Variants

The international variants of the DAYTONA have special line interface circuits to meet signaling and high voltage isolation requirements for type approvals.

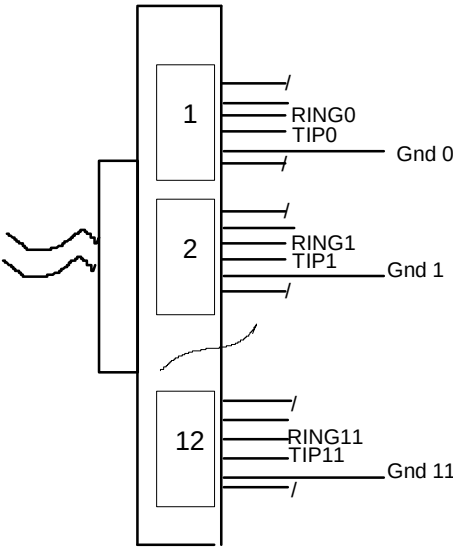
3.2.2.1 Telecom Connector

The International variants of the DAYTONA have a different pinout from the domestic version in order to maintain high voltage separation requirements, and to include the third 'Ground Input' lead:



Telco Connector (International Version)

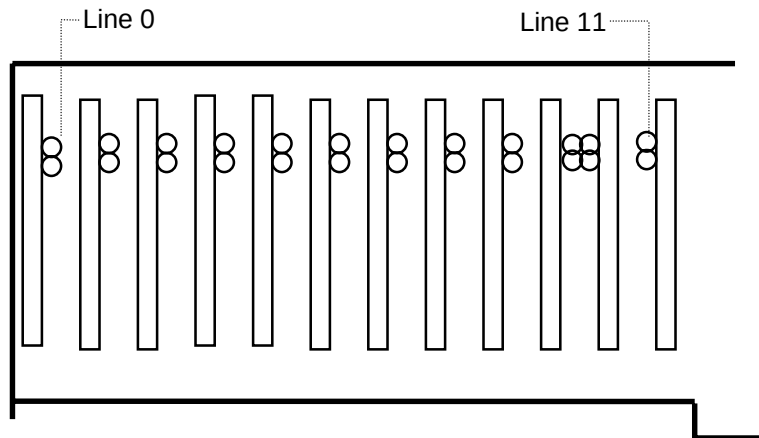
The following diagram illustrates the pinout provided by the optional Telco line extender cable and breakout box:



RJ11 Breakout Cable (International Version)

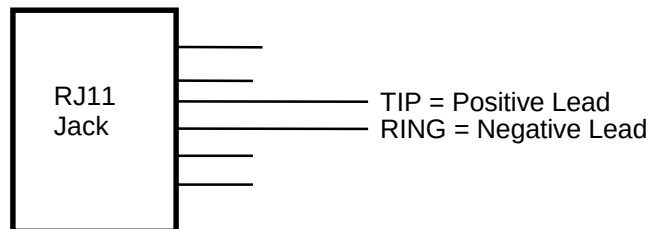
3.2.2.2 Loop Detector Setup

The International versions, DAYTONA-i , -i/GT provide jumper options to configure the circuit's loop current detector as a loop reversal detector. When the jumper is installed, the circuit detects loop current disconnects, regardless of line polarity. If the jumper is removed, the circuit becomes polarity sensitive, producing loop current disconnect indications when the line polarity is reversed. The following figure illustrates the position of loop current detector configuration jumpers on the board:



Loop Detector Jumpers

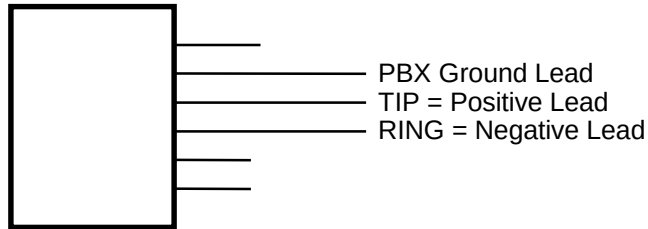
The following figure illustrates the correct line polarity for use when in loop reversal detection mode (RJ11 breakout cable):



3.2.2.3 Ground Button Setup

The International versions, DAYTONA-i , -i/GT provide a third wire input at the line interface for PBX ground input. This signal is used in the generation of the Ground Button signal for PBX alerting.

The following diagram illustrates connection of the Ground signal (RJ11 breakout cable):



3.3 MVIP Bus Setup

The switch matrix on the card is classed as *MVIP Enhanced Compliant* which means it can connect to the MVIP on the full 512 channel switching capability, and can switch internal resources without using the MVIP Bus.

In a multi card MVIP system, it is recommended that the MVIP bus clock master is positioned at one extremity of the MVIP cable. The card that is farthest away from the clock master is required to provide an AC termination of the bus clock signals.

The position of the four MVIP bus terminator jumpers is shown in the card diagram of section 3.0. Install these jumpers to terminate the MVIP bus.

Appendix A MVIP Bus

The DAYTONA includes an MVIP connector, with full access to all 512 timeslots of the MVIP bus.

The DAYTONA can be programmed under software to either SOURCE or to SINK (receive) the MVIP bus clocks and timing.

A.1 Bus Details

The MVIP bus (Multi-Vendor Interface Protocol) is a hardware standard which has been adopted by the PC based voice processing industry to provide a means of interconnecting cards from several vendors within a single chassis. The MVIP protocol defines a bus which provides a standard means for transmitting, receiving and switching digital data (PCM voice or video).

The MVIP bus is organized as 16 digital links, running synchronously at 2.048 Mbits per second, with a frame rate of 125 microseconds (8Khz), divided into 32 time slots of 64Kbits per second. A pair of clock signals and a frame pulse are used to synchronize the data flowing on the bus.

The result is a bus with a total capacity of 512 timeslots or channels which can be used either to transmit or receive data.

The intention of the MVIP bus is to allow vendors of various resource cards to interconnect the audio (or video) data between them to allow system integrators to create advanced voice and video processing systems. The MVIP bus is not intended to pass intelligent information between cards of different types, although proprietary implementations do not preclude its use in this fashion.

The general philosophy of operation in an MVIP environment is that one card in the system is a master, providing clocks and circuit switching for the MVIP bus. Other details regarding distributed switching and clock redundancy, multi-chassis interconnection and software interface are covered in the MVIP specification, available either from Mitel Corporation or Natural Microsystems.

A.2 MVIP Compatibility levels

Devices connecting to an MVIP bus, can provide various levels of connectivity and compatibility.

MVIP Compatible:

A card which can connect to the MVIP bus but does not have full 512 channel switching capability. These cards typically use jumpers or software control to allow installers to configure the system.

MVIP Compliant:

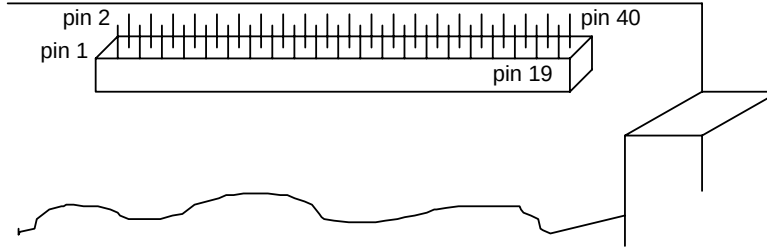
A card which can connect to the MVIP bus, providing full 512 channel switching capability. This card type may have internal resources which use some of the MVIP bus channels to perform their functions.

MVIP Enhanced Compliant:

A card which can connect to the MVIP bus, providing full 512 channel switching capability, without using any of the MVIP bus channels for internal connection of its own resources.

A.3 MVIP Connector

The following table shows standard MVIP connector definition:



MVIP PIN	NAME	DESCRIPTION	MVIP PIN	NAME	DESCRIPTION
1	RES.	Reserved	2	RES.	Reserved
3	RES.	Reserved	4	RES.	Reserved
5	RES.	Reserved	6	RES.	Reserved
7	DSO0	Serial Data Stream Out 0	8	DSI0	Serial Data Stream In 0
9	DSO1	Serial Data Stream Out 1	10	DSI1	Serial Data Stream In 1
11	DSO2	Serial Data Stream Out 2	12	DSI2	Serial Data Stream In 2
13	DSO3	Serial Data Stream Out 3	14	DSI3	Serial Data Stream In 3
15	DSO4	Serial Data Stream Out 4	16	DSI4	Serial Data Stream In 4
17	DSO5	Serial Data Stream Out 5	18	DSI5	Serial Data Stream In 5
19	DSO6	Serial Data Stream Out 6	20	DSI6	Serial Data Stream In 6
21	DSO7	Serial Data Stream Out 7	22	DSI7	Serial Data Stream In 7
23	RES.	Reserved	24	RES.	Reserved
25	RES.	Reserved	26	RES.	Reserved
27	RES.	Reserved	28	RES.	Reserved
29	RES.	Reserved	30	GND	Ground
31	/C4	4 MHz Bus Clock Ref.	32	GND	Ground
33	/F0	8 KHz Frame Pulse	34	GND	Ground
35	C2	2 MHz bit clock	36	GND	Ground
37	SEC8K	8 KHz Secondary Clock	38	GND	Ground
39	RES.	Reserved	40	RES.	Reserved

Appendix B Regulatory Warnings

B.1 Industry Canada Information

Equipment Attachment Limitations

NOTICE: The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction. Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations. Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

Load Numbers (LN)

The LOAD NUMBER (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices

subject only to the requirement that the total of the Load Numbers of all the devices does not exceed 100.

The load number of this device is : 20

Restrictions Concernant Le Raccordement De Materiel

AVIS: L'etiquette du ministere de l'Industrie Canada indentifie le materiel homologue. Cette etiquette certifie que le materiel est conforme a certaines normes de protection, d'exploitation et de securite des reseaux de telecommunications. Le Ministere n'assure toutefois pas que le materiel fonctionnera a la satisfaction de l'utilisateur.

Avant d'installer ce materiel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de telecommunication. Le materiel doit egalement etre installe en suivant une method acceptee de raccordement. L'abonne ne doit pas oublier qu'il est possible que la conformite

aux conditions enonces ce-dessus n'empechent pas la degradation du service dans certaines situations.

Les reparations de materiel homologue doivent etre affectuees par un centre d'entretien canadien autorise designe par le fournisseur. La compagnie de telecommunications peut demander a l'utilisateur de debrancher un appareil a la suite de reparations ou de modifications effectuees par l'utilisateur ou de modifications effectuees par l'utilisateur ou a cause de mauvais fonctionnement. Pour sa propre protection, l'utilisateur doit s'assurer que tous le fils de mise a la terre de la source d'energie electrique, des lignes telephoniques et de canalisations d'eau metallique, s'il y en a , sont raccordes ensemble. Cette precaution est particulierement importante dans le regions rurales.

Avertissement: L'utilisatuer ne doit pas tenter de faire ces raccordements lui-meme; il doit avoir recours a un service d'inspection des installations electriques, ou a electricien, selon le cas.

L'indices de Charge (IC)

L'indice de charge (IC) assigne a chaque dispositif terminal indique, pour eviter toute surcharge, le pourcentage de la charge totale qui peut etre raccordee a un circuit telephonique boucle utilise par ce dispositif. La terminaison du circuit boucle peut etre constituee de n'import quelle combinaison de dispositifs, pourvu que la somme des indices de charge de l'ensemble des dispositifs ne depasse pas 100.

L'indice de charge de ce produit est: 20

B.2 FCC Information

System Integrators

This section contains information applicable to system integrators, to ensure the use of the PIKA DAYTONA Family (known as "PIKA DAYTONA") complies with FCC part 68.

- i. The PIKA DAYTONA must be mounted into the final assembly so that it is isolated from exposure to any hazardous voltages with the assembly. Adequate separation and restraint of cables and cords must be provided.
- ii. The TIP/RING leads from the PIKA DAYTONA must be wired to the telephone lines in wiring that carries no other circuitry than that specifically allowed in FCC Part 68 rules. Any PC board traces carrying TIP/RING leads should have sufficient spacing to avoid surge breakdown.
- iii. The PIKA DAYTONA must be connected to a standard IBM XT/AT bus slot for correct power sources.
- iv. When the PIKA DAYTONA is enclosed within an assembly, a label shall be placed on the exterior of the cabinet listing registration numbers, and RENs of all registered devices contained therein.
- v. The final assembler shall provide in the user manual, the standard Exhibit J customer instructions as listed in section 6.2 below.

Consumer Information

The following information applies to consumers, and is also to be included by system integrators in their customer documentation.

- i. The PIKA DAYTONA complies with Part 15 and Part 68 of the FCC rules. Verified to comply with the limits for Class "B" Digital Device pursuant to Part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference in which case the user will be required to correct the interference at his own expense. On the solder side of the PIKA DAYTONA board, is a label that contains the FCC registration number, and Ringer Equivalence Number (REN) for this equipment. If requested, provide this information to your telephone company.
- ii. The REN is useful to determine the quantity of devices you may connect to your telephone line and still have all of those devices ring when your number is called. In most, but not all areas, the sum of the RENs of all devices should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the REN, you should call your local telephone company to determine the maximum REN for your calling area.
- iii. If your PIKA DAYTONA causes harm to the telephone network, the telephone Company may discontinue your service temporarily. If possible, they will notify you in advance. But if advance notices is not practical, you will be notified as soon as possible.
- iv. Your telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the proper operation of your equipment. If they do, you will be given advance notice so as to give you an opportunity to maintain uninterrupted service.
- v. If you experience trouble with the PIKA DAYTONA, please contact PIKA Technologies, 155 Terrence Matthews Cres., Kanata, Ontario K2M 2A8 Tel: 1-613-591-1555, Fax: 1-613-591-1488 for repair/warranty information. The telephone company may ask you to disconnect this equipment from the network

until the problem has been corrected or you are sure that the equipment is not malfunctioning.

vi. The PIKA DAYTONA may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs. (Contact your state public utility commission or corporation commission for information).